

CLAIM AMENDMENTS

1 1. (original) Integrated device for transmitting
2 millimetre waves comprising
3 a laser circuit (13) able to generate optical signals;
4 a photodiode circuit (17) connected to said laser circuit
5 (13) by means of a waveguide (14) and able to convert said optical
6 signals into electromagnetic signals to be transmitted in the form
7 of millimetre waves;
8 characterised by
9 an amplifier circuit (15) associated to said waveguide
10 (14) and able to apply modulation signals to said optical signals.

1 2. (original) Device as claimed in claim 1, character-
2 ised in that said amplifier circuit (15) is able to modulate in
3 amplitude said optical signals.

1 3. (currently amended) Device as claimed in claim 1
2 [[or 2]], characterised in that said amplifier circuit (15) com-
3 prises
4 modulating elements (10a, 16a) able to modulate said
5 optical signals by means of a current (1e) proportional to said
6 modulation signals.

1 4. (original) Device as claimed in claim 3 character-
2 ised in that said modulating elements (10a, 16a) are digital.

1 5. (original) Device as claimed in claim 3 character-
2 ised in that said modulating elements (10a, 16a) are analogue.

1 6. (original) Integrated device for receiving milli-
2 metre waves, characterised by:

3 a laser circuit (13) able to generate optical signals; -
4 a photodiode circuit (27) connected to said laser circuit (13) by
5 means of a waveguide (20) and comprising
6 receiving elements (40a, 40b) able to receive millimetric
7 waves;

8 circuit elements (19, 21) able to extract said milli-
9 metric waves.

1 7. (original) Device as claimed in claim 6, character-
2 ised in that said millimetric waves comprise a modulating component
3 and in that said circuit elements (19, 21) comprise demodulating
4 elements able to extract said modulating component.

1 8. (original) Device as claimed in claim 7 character-
2 ised in that said demodulating elements comprise

3 biasing elements (19, 21) able to bias said photodiode
4 circuit (27) in conditions of nonlinearity, and

5 detecting elements (19, 21) associated to said biasing
6 elements (19, 21) and able to detect said modulating component.

1 9. (original) Device as claimed in claim 8, character-
2 ised by

3 - an amplifier circuit associated to said waveguide (20)
4 and able to co-operate with said biasing elements (19, 21) to bias
5 said photodiode circuit (27).

1 10. (currently amended) Device as claimed in claim 8
2 [[or 9]] characterised in that said biasing elements (19, 21) are
3 able to bring to slight direct bias said photodiode circuit (27) by
4 means of a voltage of 200 to 300 mV.

1 11. (currently amended) Device as claimed in ~~any of the~~
2 ~~claims from~~ claim 7 to 10, characterised in that said demodulating
3 elements comprise circuit elements able to effect an optical beat
4 with the optical signals generated by said laser circuit (13) and
5 to generate electrical signals representative of said modulating
6 component.

1 12. (original) Integrated device for the reception and
2 transmission of millimetric waves characterised by
3 at least one laser circuit (13) able to generate optical
4 signals;

5 a first photodiode circuit (17) connected to said at
6 least one laser circuit (13) by means of a first waveguide and
7 having transmission elements able to transmit said optical signals
8 in the form of millimetric waves; and

9 a second photodiode circuit (27) connected to said at
10 least one laser circuit (13) by means of a second waveguide and
11 having receiving elements able to receive millimetric waves.

1 13. (original) Device as claimed in claim 12, charac-
2 terised by

3 an amplifier circuit (15) associated to said first
4 waveguide and able to apply modulating signals to said optical
5 signals.

1 14. (original) Device as claimed in claim 13, charac-
2 terised in that said amplifier circuit (15) is able to modulate in
3 amplitude said optical signals.

1 15. (original) Device as claimed in claim 12, charac-
2 terised in that said second photodiode circuit (27) comprises
3 biasing elements able to bias said second photodiode circuit (27)
4 in conditions of nonlinearity.

1 16. (currently amended) Device as claimed in claim 11
2 or 15, characterised by

3 an amplifier circuit {25} associated to said second
4 waveguide and able to co-operate with said biasing elements (19,
5 21) to bias said second photodiode circuit (27).

1 17. (currently amended) Device as claimed in ~~any of the~~
2 ~~claims from~~ claim 12 [[to 16]], characterised in that said first
3 photodiode (17) and said second photodiode (27) are connected in
4 parallel to antenna devices (40a, 40b).

1 18. (currently amended) Device as claimed in ~~any of the~~
2 ~~claims from~~ claim 12 [[to 16]], characterised in that said at least
3 one laser circuit (13) comprises coupling elements {50} able to
4 couple said laser circuit (13) respectively to said first and to
5 said second waveguide.

1 19. (original) Module for transmitting millimetric
2 waves comprising

3 an integrated device (1) having at least one laser
4 circuit {13} able to generate optical signals;

5 characterised by

6 a modulating circuit (60) able to generate modulating
7 signals (IN-MOD); and in that said integrated device (1) comprises

8 a modulating element {15} able to apply said modulation
9 signals to said optical signals.

1 20. (original) Module for transmitting millimetric
2 waves as claimed in claim 19, characterised in that
3 said optical signals comprise at least two optical modes;
4 and in that
5 said millimetric waves are generated by beat between said
6 two optical modes.

1 21. (original) Module for receiving millimetric waves
2 for cooperation with the module as claimed in claim 19, character-
3 ised by
4 an integrated device having
5 at least one laser circuit (13) able to generate optical
6 signals;
7 a photodiode circuit (27) connected to said laser circuit
8 (13) and able to receive millimetric waves having a modulating
9 component (OUT-MOD); and by
10 a demodulation circuit connected to said photodiode
11 circuit (27) and able to reveal said modulating component.

1 22. (original) Module for the transmission and recep-
2 tion of millimetric waves characterised by
3 a modulation circuit (60) able to generate modulating
4 signals (IN-MOD);
5 an integrated device (1) having

6 at least one laser circuit (13) able to generate optical
7 signals;

8 a modulating element (15) able to apply said modulating
9 signals to said optical signals;

10 a photodiode circuit (27) connected to said least one
11 laser circuit (13) and able to receive millimetric waves having a
12 modulating component. (OUT-MOD); and by

13 a demodulating circuit connected to said photodiode
14 circuit (27) and able to reveal said modulating component.

1 23. (original) Method for transmitting millimetre waves
2 comprising the step of

3 generating optical signals;

4 characterised by the steps of

5 generating modulating signals corresponding to useful
6 information to be transmitted; and

7 applying said modulating signals to said optical signals.

1 24. (original) Method for receiving millimetric waves
2 characterised by the steps of

3 generating optical signals by means of a laser circuit
4 (13);

5 receiving, by means of a photodiode circuit (27) con-
6 nected to said laser circuit (13) millimetric waves having a
7 modulating component (OUT-MOD).

1 25. (original) Method for receiving millimetric waves
2 according to claim 24, characterised by the additional step of
3 demodulating said modulating component by means of a
4 demodulating circuit.

1 26. (original) Local area network for exchanging
2 information by means of millimetric waves, characterised in that it
3 comprises alternatively:

4 at least one module for transmitting millimetric waves as
5 claimed in claim 19; and/or

6 at least one module for receiving millimetric waves as
7 claimed in claim 21; and/or

8 at least one module for transmitting and receiving milli-
9 metric waves as claimed in claim 22.